



Cleaner Wood Burning

We take pride in our quality of life in Washington State. And we all want to protect and preserve the environment.

This information describes ways each wood heat user can help reduce air pollution. Even veteran wood heat users can find ways to have a cleaner burn. Less smoke means cleaner air for you, your family, your neighbors and the environment. And the less smoke you produce, the more heat and value you get from your wood.

The fuel: Keep it dry!

Wood can seem dry and still contain plenty of water, up to 50 percent. The moisture in wood makes the fire give off more smoke. On the other hand, dry wood can provide up to 44 percent more heat. It is against state law to burn wood with more than 20 percent moisture content in fireplaces or wood stoves.

Two things work very well at making sure your wood is dry enough: time and cover. Whether you buy wood or harvest your own, follow these tips to get it fire-ready:

- ❖ *Split it.* The wood will dry best and burn most efficiently if the pieces are three and one-half to six inches in diameter.
- ❖ *Cover it.* Protect the wood from rain and weather. Stack it loosely-- in layers of alternating directions-- to allow plenty of air circulation. Store it at least six inches off the ground. Call the Wood Smoke Information Line (1-800-523-4636) for easy wood shelter plans.
- ❖ *Give it a year.* Wood that has been split, dried and stored under cover for at least one year usually meets the 20 percent moisture content requirement.

State law does not regulate the dryness of any wood sold. If the seller states that the wood is dry or seasoned, consider it a claim; make sure for yourself. You--and not the seller--are responsible for the dryness of the wood you put on your fire.

The fuel: Keep it legal!

Dry, untreated wood is legal. Manufactured logs (pressed sawdust or sawdust/wax) are legal, but be careful to follow the product instructions and to follow the recommendations in your stove owner's manual. Coal with less than one percent sulfur is legal in a coal-only stove.

State law prohibits burning the following in a solid fuel burning device:

- ❖ garbage (including diapers);
- ❖ plastic or rubber products;

- ❖ treated wood (including particle or strand board);
- ❖ asphalt-based or waste petroleum products;
- ❖ paints and chemicals;
- ❖ animal carcasses;
- ❖ anything else which normally emits dense smoke or obnoxious odors.

Paper is legal only for starting the fire.

The smoke: *There's a state law on how much!*

State law limits the density of smoke from indoor fires to ensure that people use clean burning techniques. This requirement is called the 20 percent smoke opacity limit.

Opacity means how much your view through the smoke is blocked.

100 percent opacity means you can't see anything through the smoke. 20 percent opacity means there is very little smoke and you can see almost perfectly through it. If you use dry enough fuel, the right equipment, and give your fire the right amount of air, there should be no visible smoke from your chimney or stove pipe--only heat waves.

There are two exceptions to the opacity rule which allow you limited time for denser smoke:

- ❖ *Starting the fire.* You have up to 20 minutes every four hours.
- ❖ *Stoking the fire.* You have up to six consecutive minutes in any one hour period.

The fire: Give it air!

The right amount of air gives you a hotter fire and more complete combustion. That translates to more heat from your wood and less smoke and pollution. Here are some cleaner burning tips:

- ❖ *Build small, hot fires.* Don't add too much fuel at one time.
- ❖ *Step outside and check the chimney or flue.* If you can see smoke, your fire may need more- air.
- ❖ *Read and follow* the stove manufacturer's instructions.
- ❖ *Don't "bank" the stove* full of wood and damper down the air supply. This wastes wood, produces much air pollution, promotes accumulation of creosote (which requires more frequent cleaning and can lead to chimney fires), and yields very little heat. Half-full is adequate; it provides enough air space for efficient combustion.
- ❖ *Don't damper down too far.* Allow enough air to reach the wood. This varies among models and kinds of stoves.
- ❖ *Make sure your stove is the right size for your home.* Too large a stove will over-heat your living space. You'll want to damper down. This causes added pollution and wastes wood.

- ❖ *Don't burn in moderate temperatures.* You'll want to damper down, which causes more pollution and wastes wood.
- ❖ *Don't burn when air currents carry your smoke* to your neighbor's yard or house.

The stove: *Certified is cleaner!*

The stove you use makes a lot of difference when it comes to air pollution. Any stove sold in Washington today (or from 1988 on) must meet certification standards. Certified stoves have passed an emissions standards test at an approved laboratory.

Many older stoves are uncertified - 87 percent of the wood stoves in Washington, according to the most recent State Energy Office estimates. Compared to new, properly operated certified models, uncertified stoves:

- ❖ produce approximately five times more pollution than certified models;
- ❖ use about a third more wood;
- ❖ deposit more creosote in chimneys, making more frequent cleaning necessary.

Some certified stoves come equipped with catalytic combustors, which burn away pollutants in the smoke at a high temperature. These require special attention to the manufacturer's instructions. Improper use can shorten the life of the catalyst and cause the stove to become more polluting. A worn out catalyst must be replaced immediately. Catalysts generally last one to five years.

Many pellet stoves are certified, but some don't require certification. They produce 90 to 98 percent less pollution than a typical uncertified stove. Pellet stoves, while more expensive than cord-wood models, require very little tending to operate. However, they do require regular maintenance as recommended by the manufacturer.

Effective January 1, 1992, it is illegal to install an uncertified wood stove in Washington. And after June 30, 1995, there may be permanent local bans on the use of uncertified stoves in densely populated areas. Owners of uncertified stoves are encouraged to replace them with a less polluting heat source.

Wood heat is something special

On most other heating systems everything is pre-set. With wood heat you control everything: fuel, efficiency and the amount of pollution. You use skill and intelligence because a wood fire needs your attention and management.

Burn bans: *A last resort.*

Occasionally, even the best efforts at good burning are not enough. Nobody likes burning restrictions, but in some areas the combination of weather patterns and population density cause too much wood smoke pollution to accumulate in the air. This problem especially affects residential areas--where most wood stoves are used and where people spend most of their time.

Most of the air pollution in residential areas during the fall and winter comes from burning wood. By reducing the pollutants in the air, we can improve the quality of the air. It's that simple. From time to time we may be called upon to not use our wood stoves, fireplaces and other solid fuel burning devices (unless there is no alternate heat source). Currently, burn ban programs exist or are planned in the more densely populated areas of Clark, Cowlitz, Thurston, Pierce, Kitsap, King, Snohomish, Whatcom, Yakima and Spokane counties.

These restrictions are imposed only for the time it takes to get air quality back to a healthier level. You can assist this effort by keeping aware through the media. Most radio and TV stations announce these "burn bans." Burn bans always apply to uncertified devices. Sometimes--when air pollution from wood smoke reaches higher levels--certified units must be shut down, also.

If all wood heat users operated certified wood burning devices, burned only dry wood and followed wood burning regulations, burning restrictions would be less frequent and we'd all breathe more easily during the winter.

For More Information

Washington State Energy office Toll Free Energy Hotline: 1-800-962-9731.

If you have special accommodation needs, please contact Judy Beitel, Washington State Department of Ecology's Air Program at (360) 407-6878 (voice); (360) 407-6006 (TDD). Ecology is an Equal Opportunity and Affirmative Action employer.